UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

VIRTUAL SOLUTIONS, LLC, Plaintiff, v. MICROSOFT CORPORATION, Defendants.	Case No. 1:12-CV-1118-SAS

MEMORANDUM OF LAW IN SUPPORT OF MICROSOFT CORPORATION'S MOTION FOR SUMMARY JUDGMENT OF INVALIDITY FOR INDEFINITENESS

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I. INTRODUCTION

As part of the quid pro quo of the patent system, a patentee must describe his invention with sufficient particularity and precision so that the public will understand the metes and bounds of the alleged invention. Plaintiff Virtual Solutions, LLC has alleged that Microsoft Corporation infringes U.S. Patent No. 6,507,353—a patent that includes at least two claim terms that fail to meet the fundamental requirement known as definiteness. The first term, "physical characteristic signal," is indefinite and impossible to construe because the phrase must simultaneously have two opposite meanings. The second term, "virtual environment stimulus generator," in dependent claim 8 invokes the benefit of functional claiming under 35 U.S.C. §112, paragraph 6, but fails to meet the requirement of disclosing the necessary structure corresponding to the recited function. Because the patentees failed to claim the invention of the '353 patent with sufficient precision to inform the public of the bounds of their alleged invention, the claims in which they appear are indefinite and invalid.

II. THE '353 PATENT

The '353 patent, entitled "Influencing Virtual Actors in an Interactive Environment," describes a theater into which the images of animals and objects are projected for viewing by an audience. [R. 56.1 Stmt. ¶ 2.] Sensors in the theater area detect the positions and actions of audience members and then "Stimulus Generators" analyze that data. [Id. at ¶ 3.] The patent says that a system could use this sensor data in such a way that the projected images of animals or objects would react to the audience in real-time. [Id. at ¶ 4.] These projected animals and objects would be mere aspects of the underlying computer system, but the patent refers to them as "virtual actors." [Id. at ¶ 5.]

The general concept of "virtual reality" was not new when the applicants filed the application that led to the '353 patent in December 10, 1999. [Id. at ¶¶ 1,6.] The '353 patent describes prior art systems and calls them "promising." [Id. at ¶ 7.] According to the patent, however, prior approaches were limited, for example, because a user was "bound to experiment with the pre-set scenarios of the apparatus." [Id. at ¶ 8.] The named inventors apparently viewed this limitation as an opportunity to advance the art.

The '353 patent sets out to describe a more dynamic system in which each "virtual actor" has its own behavioral model and its reactions can extend beyond the pre-determined scenarios set by the system's programmers. [Id. at ¶ 9.] Instead of following scripted routines, each virtual actor is supplied with a set of data values encoding its behavioral preferences. [Id. at ¶ 10.] In the patent, this set of data is part of the "behavioral module" associated with the actor. [Id. at ¶ 11.] When "stimuli" occur—e.g., audience actions, detected through the sensors—the virtual actor's response (if any) is calculated by analyzing the detected stimuli against the preferences codified in the behavioral module. [Id. at ¶ 12.] The response is thus not predetermined, but arises from the interaction between the sensor data and the behavioral module. The '353 patent describes this approach as promoting a better simulation of "real-life" behaviors by the virtual actors. [Id. at ¶¶ 13,14.]

III. LEGAL STANDARDS FOR SUMMARY JUDGMENT OF INVALIDITY FOR INDEFINITENESS

Summary judgment is appropriate when "the pleadings, depositions, answers to interrogatories, and admissions on file, together with the affidavits, if any, show that there is no genuine issue as to any material fact and that the moving party is entitled to judgment as a matter of law. Fed. R. Civ. P. 56; Celotex Corp. v. Catrett, 477 U.S. 317, 322-23 (1986); Ethicon Endo-Surgery, Inc. v. U.S. Surgical Corp., 149 F.3d 1309, 1315 (Fed. Cir. 1998).

"A determination of indefiniteness is a legal conclusion that is drawn from the court's performance of its duty as the construer of patent claims . . . [, and] therefore, like claim construction, is a question of law[.]" Atmel Corp. v. Info. Storage Devices, Inc., 198 F.3d 1374, 1378 (Fed. Cir. 1999) (internal quote marks and citation omitted). As a question of law, indefiniteness is an issue that is amenable to summary judgment. See, e.g., Net MoneyIN, Inc. v. VeriSign, Inc., 545 F.3d 1359, 1364, 1367 (Fed. Cir. 2008). Whether a claim limitation is a means-plus-function limitation is a question of law. Cardiac Pacemakers, Inc. v. St. Jude Med., Inc., 296 F.3d 1106, 1113 (Fed. Cir. 2002).

A. Indefiniteness Generally

The patentee has the burden to claim an invention with sufficient particularity and precision to "inform the public of the bounds of the protected invention, i.e., what subject matter is covered by the exclusive rights of the patent." Halliburton Energy Servs., Inc. v. M-I LLC, 514 F.3d 1244, 1249 (Fed. Cir. 2008) (citing 35 U.S.C. § 112, ¶ 2); see also United Carbon Co. v. Binney & Smith Co., 317 U.S. 228, 236 (1942).

Where a patentee uses "ambiguous language or vague descriptions," the public unfairly is "deprived of rights supposed to belong to it, without being clearly told what it is that limits these rights." Merrill v. Yeomans, 94 U.S. 568, 573 (1876). The doctrine of definiteness is thus a bulwark against patentees using opaque language in the hopes of improperly expanding their patent monopoly. Definiteness in claiming is also critically important to those courts charged with interpreting the patent and making determinations of novelty, nonobviousness, infringement, etc. See United Carbon, 317 U.S. at 236.

Where a patentee has failed to claim his invention with sufficient precision that one of ordinary skill in the art would understand the claim to have only one reasonable interpretation, the claim is indefinite and must be declared invalid. IPXL Holdings, LLC v. Amazon.com, Inc.,

430 F.3d 1377, 1384 (Fed. Cir. 2005) ("[A claim] 'not sufficiently precise to provide competitors with an accurate determination of the 'metes and bounds' of protection involved' . . . is 'ambiguous and properly rejected' under section 112, paragraph 2." (quoting Ex parte Lyell, No. 89-461, 17 U.S.P.Q.2d 1548, 1550 (B.P.A.I. 1990))); see also Amgen, Inc. v. Chugai Pharm. Co., 927 F.2d 1200, 1217-18 (Fed. Cir. 1991) (finding term "at least about 160,000" indefinite, and claim invalid).

B. Indefiniteness as Applied to Means-Plus-Function Claims

Section 112, paragraph 6 ("112(6)") of the Patent Act is an avenue by which a patentee may claim his invention by describing the functions performed rather than describing in the claim the actual inventive structures. See 35 U.S.C. § 112, ¶ 6 (2006).[1] Section 112(6) "was intended to permit use of means expressions without recitation of all the possible means that might be used in a claimed apparatus. The price that must be paid for use of that convenience is limitation of the claim to the means specified in the written description and equivalents thereof." O.I. Corp. v. Tekmar Co., 115 F.3d 1576, 1583 (Fed. Cir. 1997) (internal citation omitted); see also 35 U.S.C. § 112, ¶ 6 (2006).

Patentees who take advantage of section 112(6)'s functional claiming provisions still have an obligation of definiteness in claiming. The definiteness analysis for section 112(6) claims focuses on whether the specification properly discloses structure corresponding to the

[1] Congress enacted section 112(6) in reaction to the Supreme Court's ruling that functional claiming was improper and holding all claims with such claiming invalid. Valmont Indus., Inc. v. Reinke Mfg. Co., 983 F.2d 1039, 1042 (Fed. Cir. 1993). The revised statute permitted means-plus-function claiming, but placed limits on the practice. "The applicant must describe in the patent specification some structure which performs the specified function. Moreover, a court must construe the functional claim language 'to cover the corresponding structure, material, or acts described in the specification or equivalents thereof.'" Id. (quoting 35 U.S.C. § 112, ¶ 6). Thus, an applicant is limited to that which he has disclosed in his specification.

functions set forth in the claims. "If the specification is not clear as to the structure that the patentee intends to correspond to the claimed function, then the patentee has not paid that price but rather is attempting to claim in functional terms unbounded by any reference to structure in the specification," which is impermissible. Med. Instrumentation & Diagnostics Corp. v. Elekta AB, 344 F.3d 1205, 1211 (Fed. Cir. 2003).

When a patentee invokes section 112(6) and builds his claim around a function to be performed, rather than structure he has invented, he accepts the burden to disclose the structure necessary to perform that function in the patent. If the patentee fails to describe the necessary structure with specificity, a means-plus-function limitation is indefinite and the associated claim is invalid. Finisar Corp. v. DirecTV Grp., Inc., 523 F.3d 1323, 1340 (Fed. Cir. 2008).

Section 112(6) has particular relevance to patents (like the '353 patent) with computer-implemented means-plus-function claims. In such cases, section 112(6) requires not just a general disclosure that the claimed function could be implemented by a computer, but disclosure of a specific algorithm for performing the function. In re Katz Interactive Call Processing Patent Litig., 639 F.3d 1303, 1314-15 (Fed. Cir. 2011) ("[T]he algorithm by which the functions are performed must be disclosed so as 'to avoid pure functional claiming.'" (quoting Aristocrat Techs. Australia Pty Ltd. v. Int'l Game Tech., 521 F.3d 1328, 1333 (Fed. Cir. 2008))); Harris Corp. v. Ericsson Inc., 417 F.3d 1241, 1253 (Fed. Cir. 2005) ("A computer-implemented means-plus-function term is limited to the corresponding structure disclosed in the specification and equivalents thereof, and the corresponding structure is the algorithm."). If the specification does not disclose any algorithm corresponding to the computer-implemented functional limitation, then the limitation is indefinite and the claim is invalid. Katz Interactive, 639 F.3d at 1316; Aristocrat Techs., 521 F.3d at 1333.

IV. THE ASSERTED CLAIMS ARE INVALID AS INDEFINITE

Virtual Solutions asserts eight claims in this case: '353 patent claims 1-3, 5, 7-9, and 22. [R. 56.1 Stmt. ¶ 16.] Claim 1 is the '353 patent's only independent claim; all other claims incorporate claim 1's limitations.

All eight asserted claims are indefinite. First, they are all indefinite because each incorporates the limitation "physical characteristic signal." Claim 1 requires that two contradictory things be simultaneously true about the "physical characteristic signal." Because it is impossible for both things to be true, the limitation is insolubly ambiguous and claim 1 is invalid as indefinite. All of claim 1's dependents (i.e., all asserted claims) are likewise indefinite, as they incorporate by reference the contradictory requirements of claim 1. 35 U.S.C. § 112, ¶ 4 (2006) ("A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers.").

Further, claim 8 and its dependent claim 9 are invalid because they both include the functional limitation "virtual environment stimulus generator." Claim 8 describes this limitation only in terms of its functions, and so invokes section 112(6). But the '353 specification discloses no algorithm corresponding to those functions. As a result, claims 8 and 9 are invalid as indefinite.

A. Claim 1 and its Dependents Include the Insolubly Ambiguous Term "Physical Characteristic Signal," Which Render Those Claims Indefinite

Microsoft's Proposed Construction	Virtual Solutions's Proposed Construction
Indefinite.	Does not require construction. Plain and ordinary meaning.

Claim 1 and each of the claims that depend from claim 1 use a key phrase, "physical characteristic signal," in such a way that the term must simultaneously have two opposite meanings. This logical impossibility makes the claims impossible to interpret or construe.

Two phrases in claim 1 address the relationship between the "physical characteristic signal" and "position information":

> interpreting said sensor signals to provide at least **one physical characteristic signal including position information**, wherein said physical characteristic signal provides information on visitor activity and location within said theater area;
>
> providing a behavior model for at least one virtual actor;
>
> analyzing said at least one physical characteristic signal, a change over time of said physical characteristic signal and said behavior model for said at least one virtual actor to generate a behavior vector of said at least one virtual actor **using said position information and said at least one physical characteristic signal**, said behavior vector being generated in real-time; . . .

['353 Patent, Col. 16:13-25, Ex. 1 (emphases added); see also R. 56.1 Stmt. ¶¶ 18,20.][2] The claim first recites that sensor data should be interpreted "to provide at least one physical characteristic signal including position information, wherein said physical characteristic signal provides information on visitor activity and location within said theater area." [R. 56.1 Stmt. ¶ 18 (emphasis added).] This phrase requires the "physical characteristic signal" to include "position information" such as the location of visitors within the theater area.

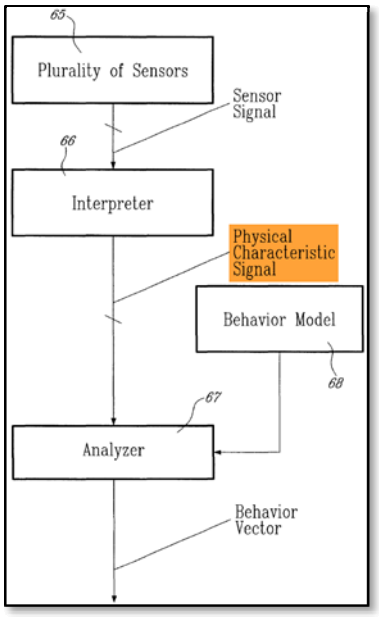
The second phrase addressing the "physical characteristic signal" indicates that the physical characteristic signal does **not** include position information because it describes generating "a behavior vector of said at least one virtual actor using said position information and said at least one physical characteristic signal." [Id. at ¶ 20 (emphasis added).] The emphasized phrase (lines 23-24) requires the system to generate a behavior vector using two distinct elements: "said position information" and a "said at least one physical characteristic

[2] Citations to "Exhibit __" refer to the exhibits accompanying the Declaration of Robert Courtney in Support of Microsoft's Motion for Summary Judgment of Invalidity for Indefiniteness, filed concurrently herewith.

signal." This provision directly contradicts lines 13-17, supra, which require the "position information" to be included within the "physical characteristic signal," i.e., the two elements are not distinct, and the signal incorporates the position information.

It is impossible for "said position information" to be simultaneously distinct from and incorporated within "said physical characteristic signal." They must either be one or the other. Neither the claims themselves nor any other available data resolves this contradiction.

The '353 patent's written description supplies no resolution. Figure 4 (right) diagrams a process depicting the "physical characteristic signal": "An interpreter 66 filters and analyzes the raw signals from these sensors a[nd] produces a physical characteristic signal which can be a bus or a single vector." [Id. at ¶ 23; see also '353 Patent, Col. 7:5-8, Fig. 4, Ex. 1.] This statement plainly does not indicate whether the "position information" is distinct from or included in this signal.



The written description also does not elaborate on the term "position information." The written description uses the term only in repetitions of the claim language and never discusses the relationship between "position information" and the "physical characteristic signal." The closest statement is silent about the relationship:

> The position of the visitor will also be determined. Sensors located at a plurality of positions will detect at least one **physical characteristic such as position** for the visitors. . . . Also, the **information** on the visitor activity and **position** could be represented on a contour map . . . .

['353 Patent, Col. 4:29-37, Ex. 1 (emphasis added); see also R. 56.1 Stmt. ¶ 24.] This statement offers no clarity on how the claimed "position information" relates to the claimed "physical characteristic signal."

The prosecution history likewise sheds no light on the relationship between "position information" and the "physical characteristic signal." In rejecting the claims, the patent examiner assumed that they required a behavior vector generated "using position information and at least one physical characteristic," but did not discuss or elaborate on the meaning of the "physical characteristic signal" or its relationship to the "position information." [R. 56.1 Stmt. ¶¶ 25-27.]

The terms, then, are ciphers, and the logical contradiction presented by the claim language cannot be resolved by the intrinsic evidence. A person of ordinary skill, reviewing the claims, would not understand their meaning. [Id. at ¶¶ 28-30.] It is simply impossible for the "physical characteristic signal" both to incorporate and be distinct from the "position information." As a result, a person of ordinary skill would be unable to determine the proper boundaries of the claim. [Id. at ¶¶ 28-34.] The ambiguity is entirely insoluble, which makes the claim is invalid for indefiniteness. Novo Indus., L.P. v. Micro Molds Corp., 350 F.3d 1348, 1358 (Fed. Cir. 2003) ("[I]n order to make sense out of the patent, the district court was required to guess as to what was intended. That is beyond its authority. . . . Since we cannot know what correction is necessarily appropriate or how the claim should be interpreted, we must hold [the claim] invalid for indefiniteness in its present form.").

Because the disputed claim term "physical characteristic signal" is insolubly ambiguous, Microsoft urges this Court to enter summary judgment that all eight of the asserted claims are invalid due to indefiniteness. See, e.g., Net MoneyIN, 545 F.3d at 1364, 1367 (noting that, as a question of law, indefiniteness is an issue that is amenable to summary judgment).

B. Claim 8 and Its Dependents Include the Indefinite Term "Virtual Environment Stimulus Generator" and Are Therefore Invalid

Microsoft's Proposed Construction	Virtual Solutions's Proposed Construction
Indefinite. This term falls within the ambit of § 112, ¶ 6. Function: "analyzing said virtual environment database and generating a virtual environment stimulus" Structure: Because the specification fails to disclose adequate structure corresponding to the recited function, the claim is indefinite.	Does not require construction. Plain and ordinary meaning.

1. This Court Should Construe "Virtual Environment Stimulus Generator" as Falling Within the Ambit of Section 112(6)

Claim 8 is the epitome of functional claiming, where a patentee describes his invention in terms of what it does rather than how it does it—i.e., the difference between "function" and "structure." E.g., Lockheed Martin Corp. v. Space Sys./Loral, Inc., 324 F.3d 1308, 1318 (Fed. Cir. 2003) ("A means-plus-function limitation recites a function to be performed rather than definite structure or materials for performing that function."). Claim 8 reads:

> 8. A method as claimed in claim 7, further comprising a step of providing a **virtual environment stimulus generator**, wherein said virtual environment stimulus generator analyzes said virtual environment database and generates a virtual environment stimulus.

[R. 56.1 Stmt. ¶ 36 (emphasis added).]

The "virtual environment stimulus generator" of claim 8 falls within the ambit of section 112(6). Although this limitation does not use the "means for [performing a function]" language frequently found in means-plus-function claiming, it still invokes section 112(6) because it describes the element not in terms of how it is arranged or organized (i.e., its structure), but what it does (i.e., its functionality). E.g., Mass. Inst. of Tech. v. Abacus Software, 462 F.3d 1344, 1354 (Fed. Cir. 2006) (finding term "'colorant selection mechanism' does not connote sufficient

structure to a person of ordinary skill in the art" to avoid section 112(6) treatment); see also Welker Bearing Co. v. PHD, Inc., 550 F.3d 1090, 1096-97 (Fed. Cir. 2008) (holding section 112(6) invoked by limitation "a mechanism for moving said finger along a straight line"); Toro Co. v. Deere & Co., 355 F.3d 1313, 1325 (Fed. Cir. 2004) (same, for limitation "control mechanism for controlling the operation of said valve").

The term "virtual environment stimulus generator" includes no structural detail of its own. This term has no preexisting meaning to those skilled in the art at the time the applicants filed the application that led to the '353 patent, and appears to have been coined by the named inventors. [R. 56.1 Stmt. ¶ 37.] "Virtual environment stimulus generator" is a generic term, conveying only that some element (whose structure is not set forth in the claim) will perform the required functions—here, "analyz[ing] said virtual environment database and generat[ing] a virtual environment stimulus." As a result of this functional claiming, the claim would cover—improperly—any and all techniques for performing these functions unless the claim is analyzed under section 112(6). See Mas-Hamilton Grp. v. LaGard, Inc., 156 F.3d 1206, 1214 (Fed. Cir. 1998) ("La Gard's claim, however, cannot be construed so broadly as to cover every conceivable way or means to perform the function of moving a lever, and there is no structure recited in the limitation that would save it from application of section 112, ¶ 6.").

The parties have agreed that "virtual environment stimulus" should be construed to mean "stimulus in the virtual environment to which at least one virtual actor can potentially respond." [See R. 56.1 Stmt. ¶ 42.] Such agreement does not, and cannot, remove "virtual environment stimulus generator" from analysis under section 112(6). A person of ordinary skill in the art, even knowing the meaning of "virtual environment stimulus," would find no structure in the claim to suggest what techniques should be used to analyze the virtual environment database and

generate such a stimulus. [Id. at ¶ 43.] The skilled artisan would simply not know how the analysis of the database ought to impact the generation of the stimulus. [Id. at ¶¶ 41.] As a result, it would be impossible for such a person to know the boundaries of the "virtual environment stimulus generator" term. [Id. at ¶ 43.] When, as here, the patentee's use of functional claiming raises the specter that the claim, if interpreted literally, might cover all possible techniques of performing the recited function, section 112(6) applies. Mas-Hamilton Grp., 156 F.3d at 1214.

2. This Court Should Hold "Virtual Environment Stimulus Generator" Invalid Because the '353 Patent Does Not Disclose A Structure Corresponding to the Recited Functions of this Limitation

Having invoked section 112(6), the applicants must disclose in their specification structure corresponding to the claimed "analyzing" and "generating" functions. If such structures were disclosed, they would define the scope of the "virtual environment stimulus generator" term. If no such structure were disclosed (as is the case here), the claim is invalid: "If the specification is not clear as to the structure that the patentee intends to correspond to the claimed function, then the patentee has not paid the price but is attempting to claim in functional terms unbounded by any reference to structure in the specification." Aristocrat Techs., 521 F.3d at 1336-37 (quoting Med. Instrumentation & Diagnostics Corp. v. Elekta AB, 344 F.3d 1205, 1211 (Fed. Cir. 2003)).

The '353 patent is bereft of structure corresponding to the "analyzing" and "generating" functions. The written description alludes to these functions only twice, and neither describes any hardware, software, or algorithms that perform the functions. See Aristocrat Techs., 521 F.3d at 1333 ("The corresponding structure for a § 112, ¶ 6 claim for a computer-implemented function is the algorithm disclosed in the specification." (citation omitted)).

First, the specification describes the functions that the virtual environment stimulus generator performs:

> The Virtual Environment Stimulus Generator 27 reads information from this database [the virtual environment database] in order to calculate the occurrence of random events such as the apparition of new actors, for example. Once the Virtual Environment Stimulus Generator 27 decides that a new actor should be created, a signal is sent to the new actor creation module 29.

[R. 56.1 Stmt. ¶ 44.] This language merely reiterates that information is "read" from the database "in order to calculate" certain events. Nowhere does it describe any actual technique—e.g., an algorithm—for either analyzing the database or generating a new "virtual environment stimulus." A person of ordinary skill in the art reviewing this language would not know the way that the claimed computer system actually worked. [Id. at ¶¶ 45,46 (reciting expert declaration that this language fails to teach how to "calculate" the occurrence of these events, or how the decision that a new actor should be created is made, and as such fails to teach a skilled artisan any structure for the claimed functions).]

The '353 patent's only other discussion of the virtual environment stimulus generator also fails to disclose any algorithms for performing the claimed functions:

> The virtual environment stimulus generator 52 computes random events and can create new actors. It can also generate a reaction using the reaction generator 56, which will be added 57 to the overall reaction generator 59. A new actor creator 60 uses the signal from the overall reaction generator 59 and decides on a reaction which is fed to the biophysical model action generator 62 of the new actor.

[Id. at ¶ 47.] Again, this verbiage omits any algorithm or other structure for how the "analyzing" and "generating" functions are performed. Alone or in combination with any other part of the '353 patent, this passage is insufficient to provide a skilled artisan with any understanding of how the claimed function is to be performed. [Id. at ¶ 48.]

Because the '353 patent fails to disclose any algorithm or other structure for performing the claimed functions, claim 8 and its dependents are invalid. Noah Sys. Inc. v Intuit Inc., 675

F.3d 1302, 1319 (Fed. Cir. 2012) ("Computer-implemented means-plus-function claims are indefinite unless the specification discloses an algorithm to perform the function associated with the limitation."); Katz Interactive, 639 F.3d 1303, 1319 (Fed. Cir. 2011); Aristocrat Techs., 521 F.3d at 1333. Accordingly, Microsoft urges this Court to enter summary judgment of invalidity as to claims 8 and 9. See, e.g., Net MoneyIN, 545 F.3d at 1364, 1367.

V. CONCLUSION

For the foregoing reasons, Microsoft respectfully requests that this Court enter summary judgment that two terms of the '353 patent—"physical characteristic signal" and "virtual environment stimulus generator"—are not amenable to construction and, therefore, are invalid.

Respectfully submitted,

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